Value Engineering in a Service-Oriented Organization

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Outline

- What is Value Engineering (VE)
- VE Methodology
- Service and performance-based contracts
- Incentives for contractors
- Summary and conclusion

Value Engineering

- Value Engineering (VE) is a process improvement methodology applied in the US Department of Defense (DoD)
- The goal of a VE effort is to increase the value of systems, equipment, facilities, services, or supplies
  - Performance
  - Durability
  - Reliability
  - Safety
  - Quality
  - Effectiveness
- Cost reduction is the most common metric used
  - VE projects do not achieve savings by reducing scope
  - Successful VE projects deliver the same or better product or service at a lower cost
- VE has a defined methodology, but is open to the application of other tools, such as Lean 6-sigma methods

Despite a history that traces back to World War II, Value Engineering has rarely been successfully applied to service-oriented or performance-based contracts

Value Engineering

- **IS …**
  - A process improvement methodology
  - A DoD-mandated program
  - Usually applied to construction or materiel acquisition
  - One of a number of DoD initiatives intended to reduce costs

- **IS NOT …**
  - Just a flow chart technique
  - Optional for DoD components
  - Usually applied to service or software acquisition
  - The only way to achieve cost savings

Because of increased budget pressure, the US DoD is re-emphasizing Value Engineering as a means of cost reduction

The Two VE Tracks

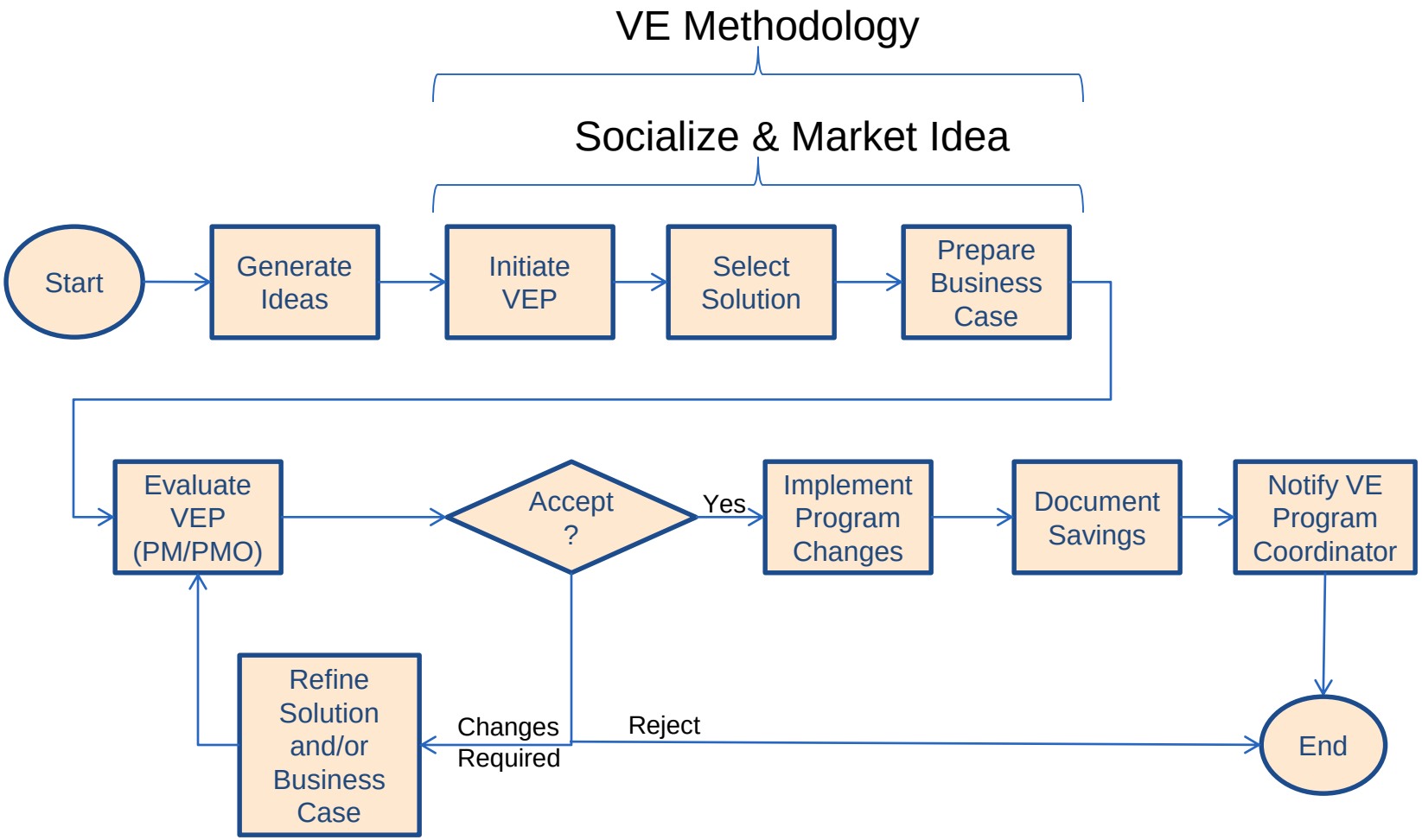
Value Engineering Proposal

- Government Initiated
- Government keeps all of the $$ savings
- Needs a VE Champion
- May require a contract mod

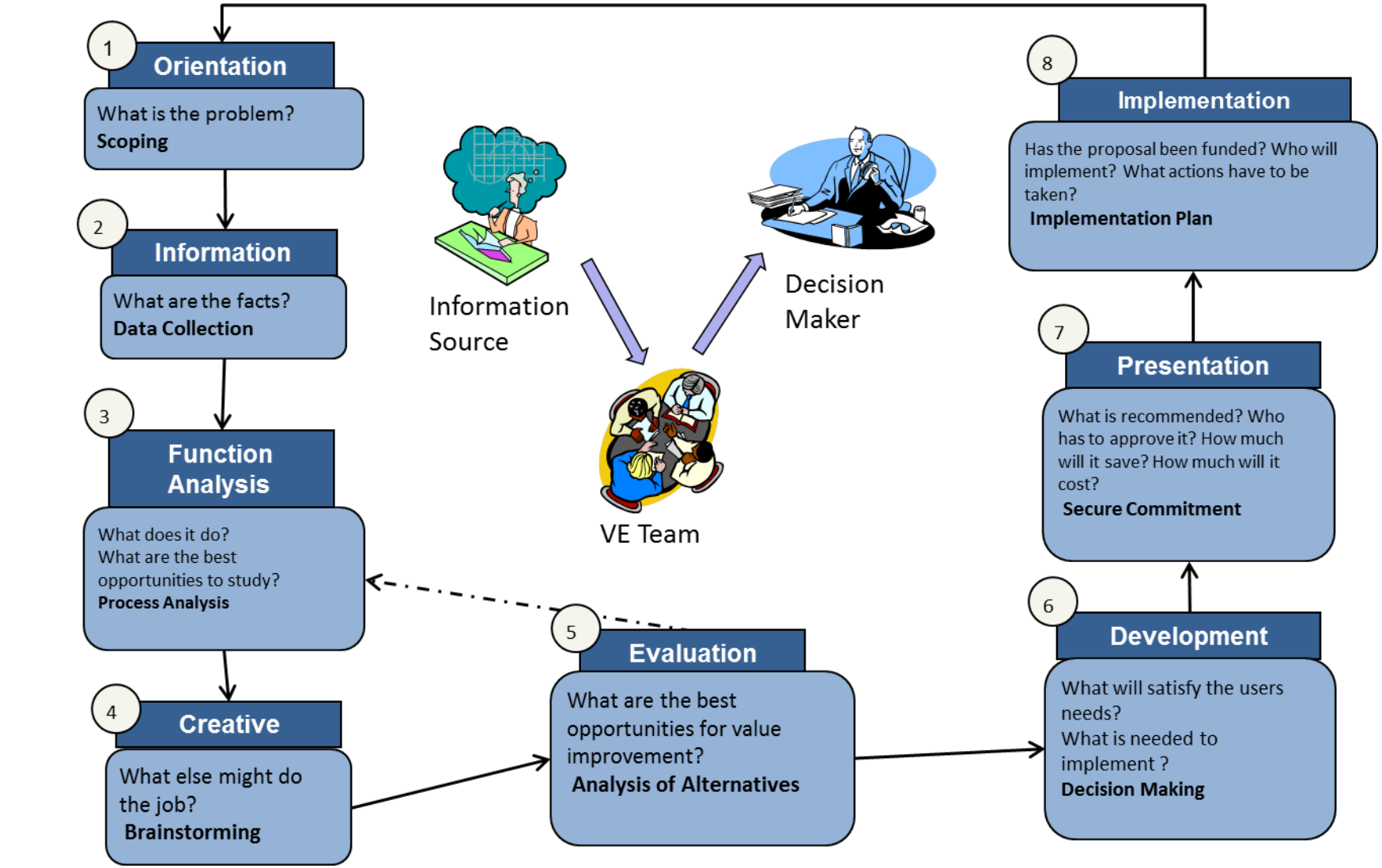
Value Engineering Change Proposal

- Contractor Initiated
- Government and contractor share $$ savings at a negotiated % split
  - (voluntary clause has a higher % split for the contractor than mandatory clause)
- Needs a VE Champion
- May require a contract mod

Value Engineering Proposal (VEP)



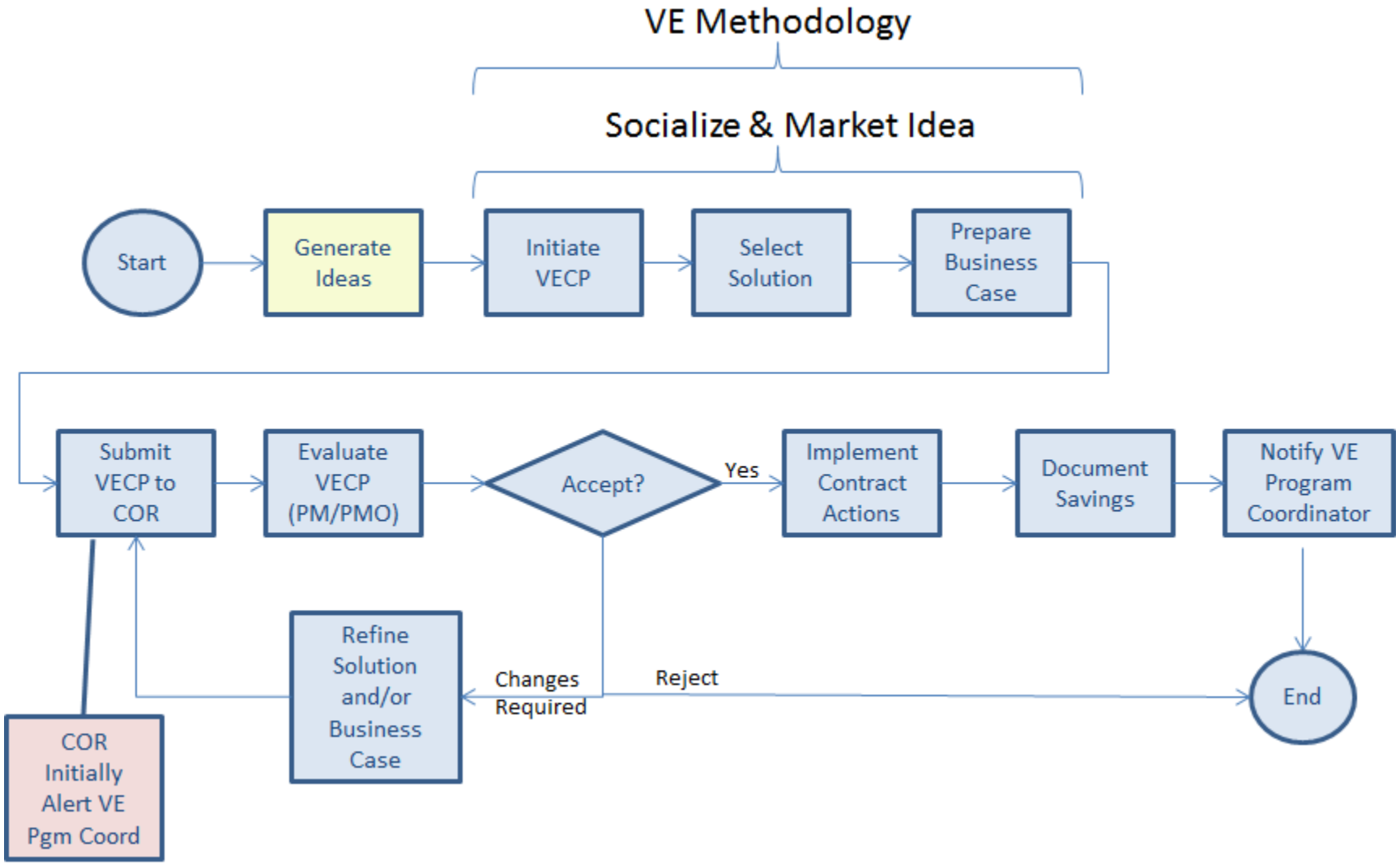
Value Engineering Methodology



Example: Reuse Satellite Ground Stations

- **Orientation**
  - New satellite ground stations required unexpected infrastructure changes
- **Information**
  - Perimeter fencing and sewer lines had to be moved at significant cost
- **Function Analysis**
  - New ground stations needed to be on-site and capable of receiving new RF signal, but followed a standard architecture
- **Creative**
  - Existing ground stations on-site could be repurposed
- **Evaluation**
  - Existing ground stations had appropriate architecture and could be retrofitted for new RF
- **Development**
  - Savings claimed for difference between refurbishment cost and original build estimate
    - Could have claimed cost avoidance for additional infrastructure costs
- **Presentation**
  - Decision was made to refurbish existing ground stations
- **Implementation**

Value Engineering Change Proposal (VECP)



Service and Performance-Based Contracts

- **VE has rarely been successfully applied for services or service-based contracts**
  - **In particular, performance-based contracts have not been addressed**
- **However, the DoD is moving toward these types of contracts for acquisitions**
- **At the same time, there is increasing pressure to lower costs**
- **We have attempted to address this gap by implementing a VE program at a large, predominately service-based DoD information technology agency**
- ***The critical issue to address is finding incentives for contractors to participate in VE***

The examples in this talk are based on US law and policy
They are intended to show the process improvement challenges that may occur and some ways to overcome them

Sharing Considerations

Whether the VE clause is the incentive or mandatory clause can alter basic considerations.

Mandatory

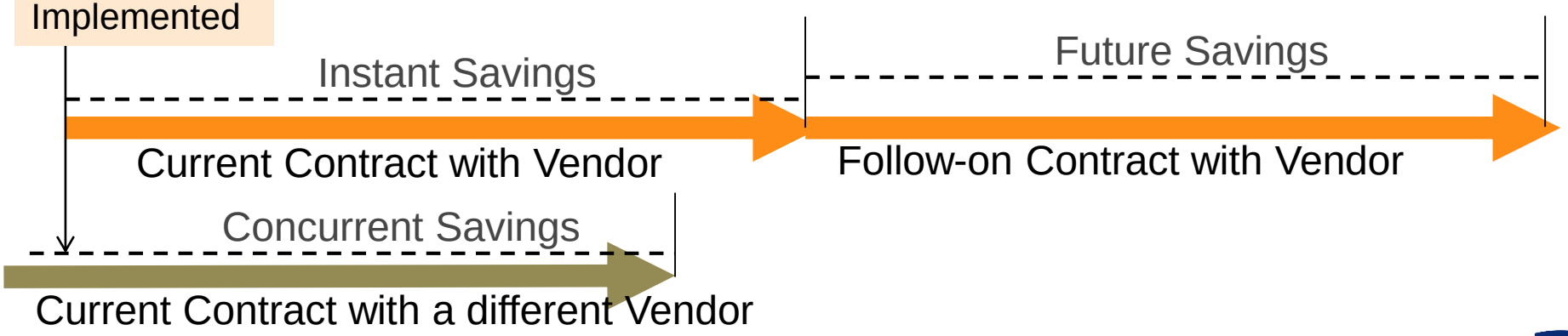
- **Government pays for:**
  - **Idea generation (Request for proposal & Statement of work)**
  - **Concept paper ($10-15K)**
  - **Tech Interchange meetings pre-VECP**
  - **Proposal prep costs ($30-$100K)**
  - **Dev & Impl costs (Up front)**
- **Contractor Incentive:**
  - **25% of net savings (Firm fixed price)**
  - **15% of net savings (Cost reimbursement)**

Voluntary

- **Contractor pays for:**
  - **Idea generation**
  - **Concept paper**
  - **Pre-VECP development**
  - **Proposal prep costs ($30-$100K)**
  - **Govt reimburses Dev costs and funds Impl $**
- **Contractor Incentive:**
  - **50% to 75% of net savings (Firm fixed price)**
  - **25% to 50% of net savings (Cost reimbursement)**

Types of Savings

- **Instant Contract Savings:** net cost reductions on the contract under which the VECP is submitted and accepted.
- **Concurrent Contract Savings:** net reduction in the prices of other contracts that are definitized and ongoing at the time the VECP is accepted.
- **Future Contract Savings:** the product of the future unit cost reduction multiplied by the number of future contract units in the sharing base.
  - On instant contracts, future contract savings include savings on increases in quantities after VECP acceptance that are due to contract modifications, exercise of options, additional orders, and funding of subsequent year requirements on a multiyear contract.

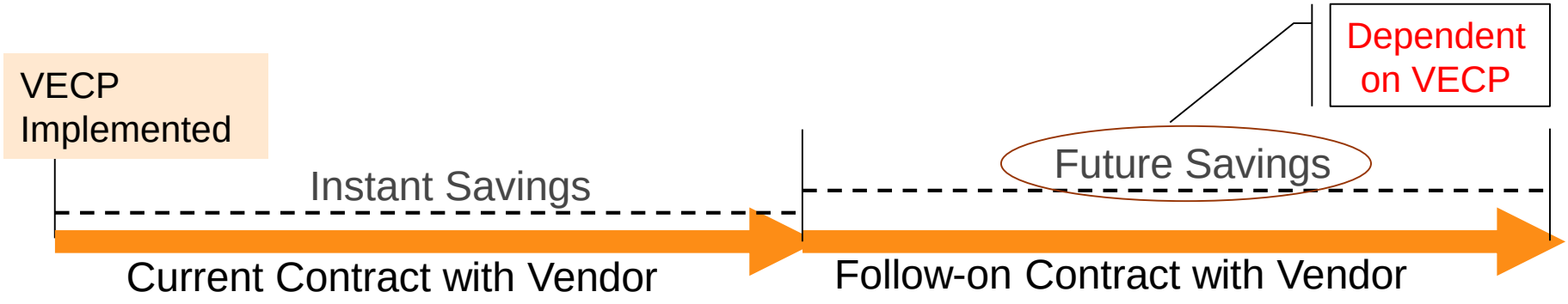


VECP in Performance-Based Contracts

- **Performance-based contracts do not preclude VE**
  - **When changes do not pay for themselves (or pay back enough) under the current contract, VECPs are still needed because they lock in savings on future contracts**
  - **Even a negotiated sole source contract with option years does not lock in the savings for the contractor**
  - **The government may require cost and pricing data before exercising an option**
- **Use VECPs to increase profit, resolve problems, share in future savings, and to be more competitive**

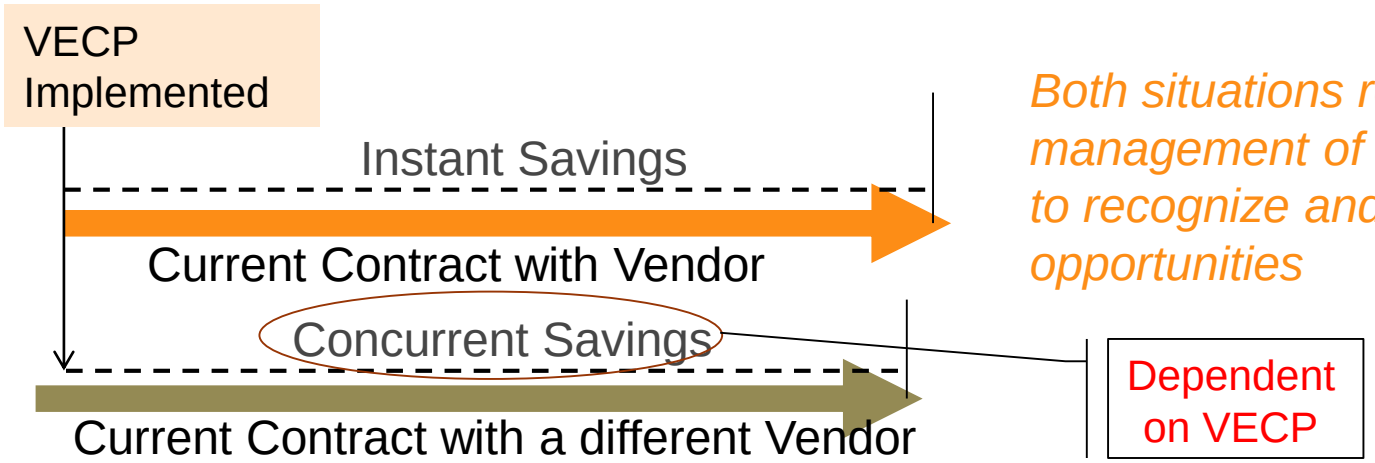
Innovative Uses of Contracts (Incentives with Option Years)

- **Ex: Performance based contracts with option years may need to be cost and price certified before executing the option years.**
- **Therefore any significant efficiencies that are not captured in a VECP will skew the cost/price data to be lower and not identify the savings.**
- **Only a VECP will protect the company savings in the form of future savings for the option years and capture the data for VE yearly reports.**



Potential Technical VECP Triggers

- **In technology service contracts, advances in technology occur more frequently than in traditional non-technical product centered programs.**
  - **Programing languages change/advance**
  - **Operating Systems change**
  - **Hardware technology refreshes**
  - **Standards governing any of these may change**
- **Redundant capabilities may be retired**
  - **As software matures and new capabilities are added, there will be redundant capabilities available to users**
- **Software may become obsolete**
  - **Software designed for activities or missions that are no longer performed may be eliminated**



Both situations require engaged management of the IT environment to recognize and act on these opportunities

Conclusion

- **Value Engineering is a useful methodology for reducing costs**
- **VE methodology has little precedent in a service acquisition organization**
- **Incentives for contractors must be in place, well-understood, and supported by processes**

Questions?

Backup

Potential Governance VECP Triggers

- **Compliance with:**
  - **Laws, Regulations, and Policies**
  - **Strategic Guidance**
  - **Relevant Authoritative Architectures**
  - **Technical Direction**
- **Periodic Management Reviews of the Program**

- **A change in the compliance requirements may drive a review that includes a VE effort**

Potential Governance VECP Triggers cont.

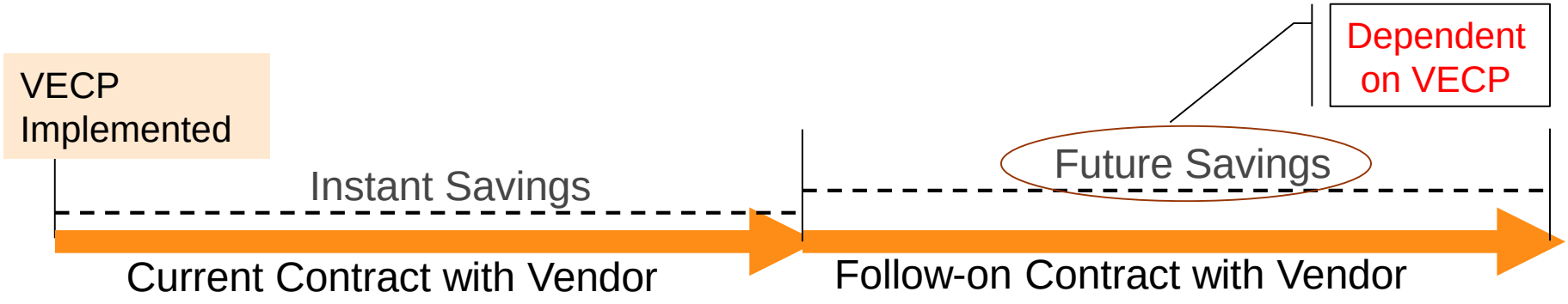
- **For example, the Technical Direction includes the DoD IT Standards Registry (DISR). The DISR maintains a database of all technical standards that are defined as either Emerging, Mandated, or Retired.**
- **When a technical standard within the DISR is redefined, all affected portfolios should review the standard for applicability and potential inclusion for VE savings:**
  - **New Emerging Standards**
  - **Emerging Standards changing to Mandated Standards**
  - **Emerging/Mandated Standards changing to Retired Standards**

Potential Technical VECP Triggers

- **Diminishing Manufacturing Sources and Material Shortages (DMSMS) have large potential for VE return on investments.**
- **In technology service contracts, advances and changes in technology occur more frequently than in traditional non-technical product centered programs.**
  - **Programing languages change/advance**
  - **Operating Systems change**
  - **Hardware technology refreshes**
- **Cross portfolio VE efforts should be conducted when major technology changes occur**
  - **(Windows 7, 64 bit systems, cloud based services, mobile services, etc.)**

Innovative Uses of Contracts (Incentives with Share lines)

- **On cost under runs, the share line is normally only applicable to the current contract.**
- **If a VECP is submitted during the under run period, future savings can be realized for the contractor, since the VECP innovation is locked in.**
- **Otherwise the government will negotiate future contracts at the under run rate and the company will not receive the potentially eligible VECP future savings.**



Literature Review

- A review of twelve years worth of abstracts for white papers collected by the Society of American Value Engineers yielded no mentions of "performance-based" and only incidental mentions of "service"
  - http://www.value-eng.org/
- The Institute for Defense Analysis release "Value Engineering and Service Contracts" in 2009 to encourage VE use, but gave no concrete examples
  - http://www.acq.osd.mil/se/docs/Value-Engg-Service-Contracts-IDA-Rpt-3733.pdf
  - Mandelbaum, J., Merson, I., Reed, D., Vickers, J., Roark, L., *Value Engineering and Service Contracts,* Institute for Defense Analysis, June 2009
- Carnegie Mellon conducted a study in 2004 that yielded 19 examples of process improvement in large-scale IT efforts
  - Most focused on error-reduction
  - Many just highlighted overall benefits of CMMI, a related process improvement concept
  - None specifically used VE methodology
  - Capell, P., *Benefits of Improvement Efforts,* Carnegie Mellon Software Engineering Institute, September, 2004.

Value Engineering History

- Concept originated during WWII as a systematic approach to handling material shortages by Larry Miles – General Electric
- 1957, Navy's Bureau of Ship Building established first formal VE activity
- 1959, Added to the ASPR (forerunner of today's FAR)
- 1963, DoD established program
  - In-house
  - Incentive program for contractors
- 1988, OMB Circular A-131 issued
- 1993, OMB Circular A-131 mandated use of VE by all agencies
- 1996, National Defense Authorization Act of FY 1996 (P.L. 104-106, Sec. 4306), "Each Executive Agency shall establish and maintain cost-effective value engineering procedures and processes."
- 2011, PL 111-350 reworded Title 41 on public contracts

Handbook of VE

- Program Intent
- VE Overview
- Projects Requiring VE
- VE Planning
- Annual Portfolio VE Plan
- Conducting VE Studies
- Metrics, Reporting and Program Support
- Quality Control / Quality Assurance
- VE Training
- Awards Program
- Points of Contact
- Acronyms, Definitions, Tools and Techniques

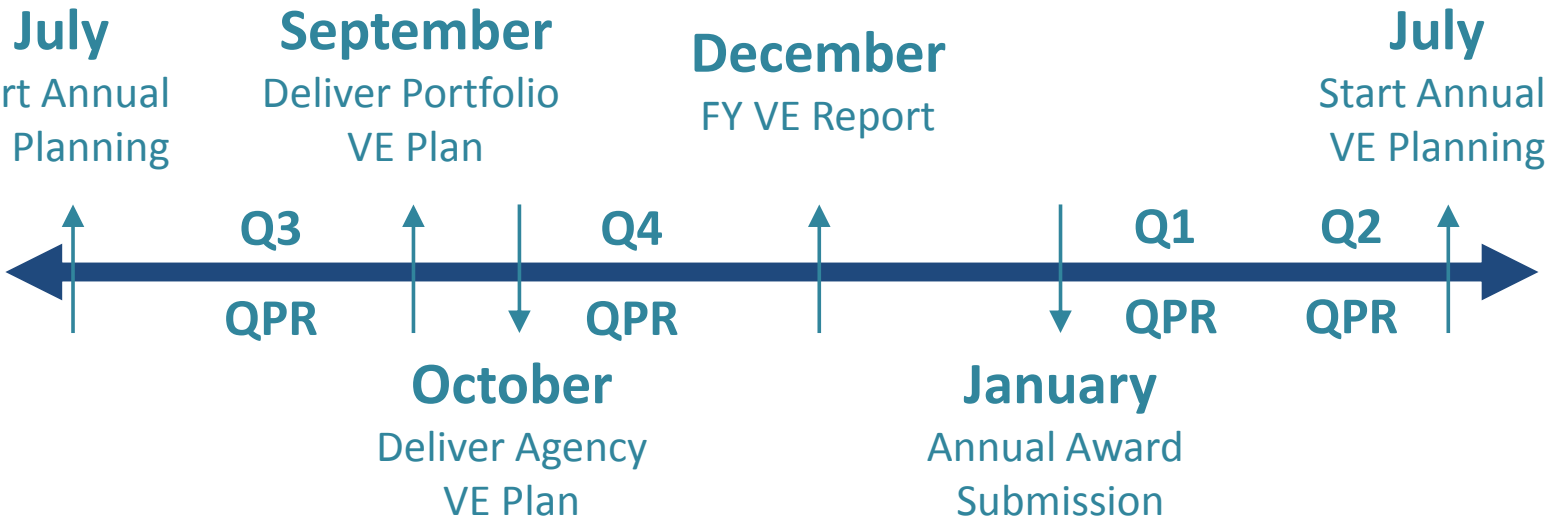
Roles and Responsibilities

- **Program/Project Manager or System Owner**
  - Define the overall goals and objectives for VE for their program/project/system
  - Identify and execute annual VE activities
  - Provide subject matter expertise and resources required to support VE activities
- **Value Engineering Program Coordinator**
  - Agency VE Program Coordinator (VEPC) and VE subject matter expert (SME)
  - Oversees execution of Agency VE program in accordance with DoD guidance.
  - Facilitates development of portfolio/directorate VE plans
  - Validates and synchronizes portfolio/directorate VE plans; develops annual Agency VE Plan
  - Monitors progress of VE Plan execution and develops annual VE metrics report for DoD.
  - Develops and provides VE training
  - Reviews VE activity with VEMs at a minimum annually and prior to Quarterly Portfolio Reprots; records current Agency VE activity
  - Provides technical assistance to VE study groups and conducts Quality Assurance review of their products
  - Assists VEMs with developing VE award nomination packages, validates nomination packages, coordinates award activities with MPS, and submits agency Director-approved packages to VE Management Advisory Group

Roles and Responsibilities

- **Value Engineering Manager**
  - Designated VE point of contact and VE SME within the assigned portfolio or directorate.
  - Develops local VE processes to execute the program in accordance with the VE program.
  - Develops and monitors execution of annual VE plans
  - Monitors performance of VE study groups; keep VEPC informed on progress.
  - Validates VE activities reported in Quarterly Portfolio Reports
  - Provides VE updates to the VEPC to track current VE activities
  - Participates in VE study groups, where appropriate
  - Participates in VE study group decision briefs
  - Builds VE award nomination packages, where appropriate
- **Value Engineering Study Team Lead**
  - Manages the study group and acts as the project manager for a specific VE study.
  - Identifies subject matter expertise required to support the VE study.
  - Works with stakeholders, to include the VEM, to align study activities with program/project, portfolio and Agency goals and objectives.
  - Obtains any required technical assistance from the VEM or the VEPC
  - Prepares the VE Decision Briefing and the VE study findings
- **Value Engineering Study Facilitator**
  - Works with the VE Study Team Lead to plan and conduct the study and meetings.
  - Ensures meetings stay on track and that appropriate methods are used to conduct the study.

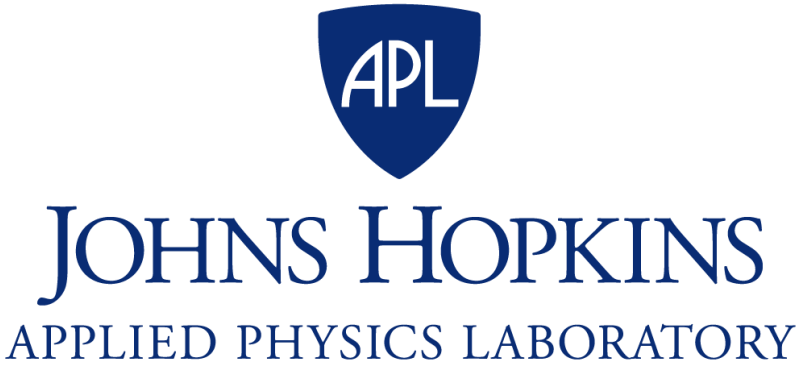
Annual VE Planning and Reporting



- **Programs/Projects/Systems define VE objectives for year**
- **Portfolio/Directorate VEMs validate and synchronize portfolio/directorate goals and objectives**
  - **VEPC validates and synchronizes portfolio/directorate VE plans and develops Agency VE Plan**
- **Progress is tracked through Quarterly Portfolio Reports and Agency data repository**
- **VEPC compiles and delivers the Annual VE Report to DoD**
- **VEPC works with Portfolio VEMs to submit relevant VE projects for recognition by Agency and DoD**

Training Modules

- **General**
  - **One-hour online orientation brief for Agency-wide training**
  - **Leadership-level overview briefing on VE**
- **VEP**
  - **Two-day VE methodology orientation with PEO MA**
    - Engage PMs on a specific and portfolio relevant topic.
  - **Identified and consolidated external VE training module links**
    - Defense Acquisition University (DAU) VE training modules.
- **VECP**
  - **Contracting Officer Representatives (CORs) training**
    - Focuses on the contract implications of voluntary contractor-initiated VECPs.
  - **Contractor VECP training module**
    - Increase contractor awareness and voluntary VE participation.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